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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,304	01/27/2006	Chungdam Song	SLN-0001	5038
23413	7590	09/14/2007	EXAMINER	
CANTOR COLBURN, LLP			PENDLETON, DIONNE	
55 GRIFFIN ROAD SOUTH			ART UNIT	PAPER NUMBER
BLOOMFIELD, CT 06002			2627	
			MAIL DATE	DELIVERY MODE
			09/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/566,304	SONG ET AL.
	Examiner	Art Unit
	Dionne H. Pendleton	2627

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 July 2007.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 and 3-12 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1 and 3-12 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Pavlovic (US 2002/0172389 A1).**

Regarding claim 1,

In figure 1, Pavlovic teaches a surface mountable electret condenser microphone comprising a case 1, a polar ring 2, a diaphragm 3, a spacer 4, a back-plate 5, a first base (see the unlabeled structural element interposed between the housing member “1” and the inner transducer arrangement “2”, “3”, “4”, “6”), a second base 6, and a printed circuit board (PCB) 7, wherein the first base (shown, but not labeled) surrounds the polar ring 2, a diaphragm 3, a spacer 4, and back-plate to protect an electret formed on any one of the diaphragm and the back-plate in a reflow process for surface mounting.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlovic (US 2002/0172389 A1) in view of Isogami (US 5,272,758).**

Regarding claim 3,

PAVLOVIC teaches the microphone of claim 1. Pavlovic fails to clearly teach that at least one of the first base, the diaphragm, the spacer and the back-plate is made from any one selected from polymer-based materials of ASA, Nylon 6, Nylon 66, Nylon 46, LCP, PBT, PC, PC/ABS, PC/PBT, PEEK, PEN, PES, PET, PMMA, POM, PTFE, SAN, PPS, SBR and TPU, and in from fluoro resin-based materials of PTFE(TFE), FEP, PFA, ETFE, CTFE, PVDF, PVE, PCTFE, ECTFE, EPE, Nylon 6, PP and hard PVC.

However, in **column 2, line 66-68 and column 3, line 68 through column 4, line 3**, ISOGAMI teaches a base (28) made from FEP, a fluoro resin-based material. It would have been obvious for one of ordinary skill in the art at the time of the invention to substitute the base (28) made of FEP material as taught by Isogami, for the first base shown in **Figure 1** of Pavlovic, for the purpose of insulating the electrically conductive elements of the transducer in Pavlovic, from the electrically conductive enclosure.

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3. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Pavlovic (US 2002/0172389 A1)**.

Regarding claim 4,

PAVLOVIC teaches a surface mountable electret condenser microphone as claimed in claim 1, wherein the PCB allows various components (*shown in Figure 1, unlabeled*) to be mounted thereon.

Pavlovic does not explicitly teach that the components are soldered by cream solders for high temperature.

However, the Examiner takes *Official Notice* that cream soldering techniques are well known in the art and would have been obvious to employ as an alternative method for connecting the microphone circuit parts to the PCB. (*See pertinent reference, cited below*)

4. **Claims 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Pavlovic (US 2002/0172389 A1)** in view of **Takeuchi (US 6,870,938)**.

Regarding claim 5,

PAVLOVIC teaches a surface mountable electret condenser microphone as claimed in claim 4, wherein the PCB (7) allows IC devices (*shown*) to be mounted

thereon. Pavlovic fails to explicitly teach that the IC devices include a field effect transistor.

TAKEUCHI teaches a surface mountable electret condenser microphone comprising a field effect transistor (**see, element "130" in Figure 3; see, column 2, line 64 through column 3, line 3**).

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Pavlovic and Takeuchi, incorporating a field effect transistor into the IC device of Pavlovic, for the purpose of providing impedance conversion, as is well understood in the art.

Regarding claim 6,

Takeuchi teaches a IC having built in a gain amplifier mounted thereto (**see, element "130" in Figure 3; see, column 2, line 64 through column 3, line 3**).

Regarding claim 7,

Takeuchi teaches that the IC device may include an analog-digital converter for digital conversion (**see, column 5, lines 63-67**).

5. **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlovic (US 2002/0172389 A1) in view of Furst (US 2002/0106091).**

Regarding claim 8,

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PAVLOVIC teaches a surface mountable electret condenser microphone as claimed in claim 4, wherein the PCB allows IC devices to be mounted thereon. Pavlovic does not specifically teach that the IC device includes a decimation filter and a digital interface.

In paragraph [0018], FURST teaches an IC device including a decimation filter and a digital interface. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Pavlovic and Furst, providing a decimation filter and a digital interface for communicating with the analog to digital converter so as to provide the input data at three times a symbol rate.

6. **Claims 9-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlovic (US 2002/0172389 A1) in view of Jore (US 7,109,625).

Regarding claim 9,

PAVLOVIC teaches a surface mountable electret condenser microphone as claimed in claim 1, wherein the PCB is inherently provided with a connecting terminal (*see, curved protrusion*) for connecting with an external circuit.

Pavlovic does not clearly teach that the connecting terminal is formed with at least one groove for discharging gases generated in the reflow process for surface mounting.

In **Figure 6a**, JORE teaches a connecting terminal arrangement in the same field of endeavor wherein the PCB is provided with a gas exhaust groove (**49**) for exhausting gas. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Pavlovic device per the teachings of Jore, so as to allow for heat dissipation in the microphone during the surface mounting process.

Regarding claim 10,

Pavlovic teaches a surface mountable electret condenser microphone as claimed in claim 9.

In **Figure 6a**, Jore teaches a connecting terminal arrangement in the same field of endeavor wherein a central terminal **48** is provided. In **figures 7-11**, Jore further teaches that terminal conductors in various configurations may be provided.

Regarding claim 11,

In **Figure 1**, Pavlovic teaches an electret condenser microphone having a curled surface which also serves as a connecting terminal.

Pavlovic does not teach that the connecting terminal is separate from the curled surface of the microphone, and thereby fails to teach that the connecting terminal protrudes higher than the curled surface.

Nevertheless, Pavlovic recognizes a need in the art for providing a connecting terminal which protrudes outward from the surface of the microphone. The Examiner therefore takes *Official Notice*, that it is well known in the art and would have been

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obvious to provide a connecting terminal for a surface mountable microphone having a curled surface, wherein said connecting terminal is fashioned so as to protrude beyond the surface of the microphone, thereby facilitating an easily contactable point of connection between the microphone and external electrically connectable elements.

Regarding claim 12,

The combined disclosures of Pavlovic and Jore teach the invention of claim 9. The combined disclosures do not clearly teach that the connecting terminal has a ball grid array.

However, the Examiner takes *Official Notice* that processing by way of solder ball techniques, interpreted as reading on "ball grid array" claimed, is well known in the art and would have been obvious to employ as an alternative method for connecting the microphone circuit parts to the PCB. (*See pertinent reference, cited below*).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hiramoto (US 6,999,596) teaches connection via cream soldering techniques in *column 18, lines 42-43*; and connection via ball grid array in *column 17, lines 60-63*.

Fujimoto (US 6,549,636) teaches in *Figure 1(b)* a protruding connecting terminal.

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8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

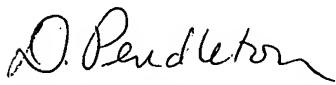
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

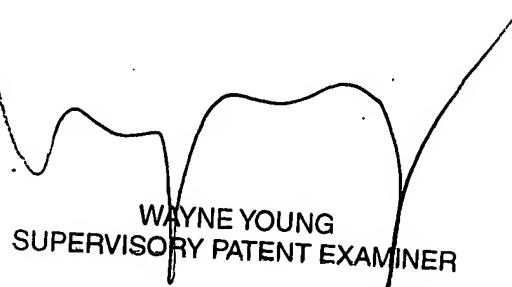
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne H. Pendleton whose telephone number is 571-272-7497. The examiner can normally be reached on 10:30-7:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


D. Pendleton


WAYNE YOUNG
SUPERVISORY PATENT EXAMINER